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Gordon H Telfer
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the application of:	)	
KOWALIK ET AL.	)	
Serial No. 10/788,961	)	Art Unit 2832
Filed: February 28, 2004	)	
For: ARC EXTINGUISHING DEVICE WITH HIGH SPEED WHIP	)	Examiner: M. Fishman

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APPEAL BRIEF

This Brief is submitted in accordance with 37 CFR §41.37, following the Notice of Appeal sent June 2, 2005, and is accompanied by the fee of $250 (small entity) set forth in §41.20(b)(2).

Table of Contents

(i) Real Party in Interest

The real party in interest is Cleaveland/Price Inc., the assignee of the subject application.

(ii) Related Appeals and Interferences

There are no prior or pending appeals, interferences or judicial proceedings known to appellants, their attorney, or their assignee, which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(iii) Status of Claims

Claims 1-54 are, or were, entered in the application and have the following present status:

Rejected claims: 2, 5-12, 15, 17-20, 31, 33-42, and 44-51;
Allowed claims: 22-30 and 32;
Objected to claims: 43 and 52-54; and
Canceled claims: 1, 3, 4, 13, 14, 16, and 21.

This appeal is taken from the rejection of each of the rejected claims with the status of the objected to claims subject to results of the appeal.

(iv) Status of Amendments

A proposed amendment to present claims in better form for consideration on appeal was submitted May 3, 2005,

subsequent to the final rejection. By an advisory action of May 17, 2005, that amendment was denied entry and, therefore, does not affect this appeal. No other post-final amendments have been filed.

(v) Summary of Claimed Subject Matter

This summary briefly explains the subject matter of the appealed claims, particularly the independent claims, with reference to the specification and drawing for description and illustration of some embodiments of the subject matter. None of the claims includes a "means plus function" or a "step plus function".

Independent claim 11

A whip-like contact structure is, for example, useful as part of an arc extinguishing device 30 of an air break switch 10 in the embodiment of Figs. 1A and 1B. Whip 32 is described in a switch opening operation at page 7, line 23, to page 8, line 8. A whip 32 of this example can have, as one type of embodiment, a structure including two parts: a tip end portion of a conductor on a nonmetal (such as fiber reinforced plastic or FRP) and a base portion of a different composition, such as all metal, as described at page 7, lines 16-22.

Claim 11 defines such a whip-like contact structure, with the two parts, that are tapered and joined end to end, as further shown in the examples of Figs. 10, 11, and 12 (whip 832 with a first (base) part 832b and a second (tip) part 832a as described at page 13, line 20, to page 14, line 12).

Claim 11 expresses that the first part (e.g., 832b) is of "substantially all-metal material". Some examples are described at page 14, lines 9-12.

The claim defines the second part (e.g., 832a) as "having a different composition than the first part with a density less than that of the first part." Some examples of the composition of the second part are as described at page 8, line 24, to page 9, line 5. Page 13, line 30, to page 14, line 1, for example, characterizes an effect that can result by a difference in the whip parts that includes lower weight of the nonmetal portion.

Claim 11 describes the two parts as, along with other characteristics,

> "each having an electrically conductive surface forming a continuous conductive path along the outside of the joined parts with the conductive path exteriorly exposed for contact along its length".

This structure is exemplified by whips with joints of conductive elements such as a metal sheath 62 of Fig. 11 (page 14, lines 15-20) and, in Fig. 12, a socket in the end of metal part 832b in which the end of part 832a and its surface conductor 850a is bonded to connect the two parts, including (page 14, lines 23-25) contact of the conductor on part 832a with the metal of part 832b. The described embodiments have the conductive surface of the whip structure "exteriorly exposed for contact" such as for use in an arc extinguishing device like that of Figs. 1A and 1B with contact of a whip 32 with a latch 36 (page 7, lines 28-31).

Dependent claims 12, 15, 17-20 and 31 include (claims 12, 15, 17, 18 and 31) a form of joint between the two whip parts, such as that shown as joint 858 in Fig. 15 that has a metal spine 860 within a central tapered hollow of the second part 832a', page 21, lines 25-27. Among such claims there is, in 17 and 18, definition of a rod assembly as in Figs. 2A and 2B. They also include (as in claims 19 and 20) further definition of the composition of one or both parts of the whip. See, e.g., page 18, line 28, to page 19, line 17, in which examples of differing characteristics including specific strength and density are described at page 19, lines 8-13; such differing characteristics being in the previously described example of two parts of (1) all metal and (2) FRP with an applied conductor.

Independent claim 33

Claim 33 is directed to an air break switch, such as that shown in Figs. 1A and 1B, that includes main switch contacts (13a and 13b) subject to relative movement, and, also, a whip (32) and a latch (36) conductively connected with respective main contacts; the whip and latch conductively engage during switch opening as shown in the succession of views of Fig. 1B and as described at page 7, line 23, to page 8.

Claim 33 defines the whip structure of the combination as including, at least in a tip-end portion, a flexible nonmetal rod with a surface conductive path comprising at least one conductor selected from the group consisting of a metal braid (350 of Fig. 4, page 12, lines 4-14), a metal foil or metal sheath (50 of Figs. 2A, 2B and 3, page 11, line 24, to page 12, line 3), and a metal wire

(550 of Fig. 7, page 12, lines 26-29). Also, see page 13, lines 13-16. Any such conductor or combination of conductors has conductive continuity (page 11, lines 29-30).

Dependent claims 34-40 (that are rejected) include further definition of the nonmetal material of the whip as containing FRP (claims 34 and 40), and the latch having a wheel engaging the whip (claims 35 and 38), see Fig. 13, wheel 936b, page 15, lines 1-12, and Figs. 14A and 14B, wheel 1036b, page 17, lines 6-10. Claims 36-38 include definition of the nonmetal rod of the whip as part of a rod assembly, Figs. 2A, 2B and 3, page 9, line 8, to page 10, line 5. Claims 39 and 40 say the initial contact region of the whip to the latch has a conductive metal surface "of relatively high weight and durability to better withstand arcing during initial switch opening and closing compared to the weight and durability of the conductive path over a majority of the whip tip-end portion". Claim 40 further defines the initial contact region as including metal "in addition to that...on the majority" of the nonmetal whip portion. For these aspects of claims 39 and 40, see page 11, lines 13-20 as well as Fig. 8, page 12, line 30, to page 13, line 2, and also Fig. 14A, page 17, lines 18-21.

Independent claim 41

Claim 41 is directed to a switch such as an air break switch 10 of Figs. 1A and 1B with a whip 32 or a switch as shown in Figs. 14A, 14B and 14C with a whip 1032 (among other elements), that includes, in at least a tip-end portion of the whip, a rod assembly of a first nonmetal rod with one or more additional rods arranged within a tapered hollow center of the first rod and in direct contact at one,

blunt, end and spaced from each other at their outer, tip, ends as shown in Figs. 2A and 2B and described at page 9, line 8, to page 10, line 5, in connection with a rod assembly 40 in a whip 132. Also, see page 16, lines 7-8, regarding whip 1032 of Figs. 14A-14C as being some form of the previously discussed whips, of which whip 132 is one. As explained at page 3, lines 20-25, a rod assembly is applicable to a two-part whip embodiment as well as to an entire length of a whip as mentioned at page 9, lines 8-10.

Dependent, and rejected, claims 42 and 44-47 include definition in claims 42 and 45 of each of the nonmetal rods as containing fiber reinforced plastic (e.g., page 9, lines 3-5). Claim 44 defines the surface conductive path of the whip as comprising one or more conductors of the group discussed above in connection with independent claim 33 (page 11, line 24 to page 13, line 19). Claim 45 refers to the latch including a conductive wheel (Fig. 13). Claims 46 and 47 specify characteristics of the initial contact region, similar to claims 39 and 40 that are dependent on claim 33, as discussed above.

Independent claim 48

Claim 48 is directed to a whip-like contact structure (Figs. 15, 16 and 17) in which a flexible rod (841) has a conductive path including metal strands (851) bonded to the rod surface by an adhesive (853) at interstitial locations (852). See page 19, line 20, to page 20, line 10.

Claims depending from claim 48 are 2, 5-10, and 49-51. The adhesive, in claims 2 and 5, contains metal particles with, in claim 5, an adhesive including a resinous

material from a specified group (page 20, lines 1-6). In claim 6, the rod comprises FRP material. Claims 7, 8 and 49 have limitations on aspects of the relation of the rod, strands, and adhesive. Claims 9, 10, and 49-51 include the rod in a rod assembly; and claims 10 and 49-51 recite aspects of a two-part whip. The subject matter is illustrated by the example of Figs. 15-17, pages 19-23.

* * *

The foregoing is believed to concisely explain the subject matter but applicants include this supplemental categorization of the claims that may facilitate their consideration on appeal. This summary of claims' subject matter by categories is offered as a possible convenience for an overall understanding of the claims. It is, of course, the points made in the Argument hereinafter that address the deficiencies of the rejections. In all parts of this Brief, any claim extracting, paraphrasing or summarizing is merely for brevity and simplification of the Brief without any implication of altering the actual claim language or imposing a claim construction not otherwise present.

In their general character, the rejected claims can be said to be of two types:

I. Claims directed to a "conductive whip-like contact structure", as a subcombination without calling for a combination with other elements. Such claims include independent claim 11, with dependent claims 12, 15, 17-20 and 31, and independent claim 48, with dependent claims 2, 5-10 and 49-51.

II. Claims directed to an "air break switch" that includes a whip of particular structure and a latch that conductively engages the whip in switch operation. Such claims include independent claim 33, with dependent claims 34-40, and independent claim 41, with dependent claims 42 and 44-47.

Each of the claims of both types I and II include some form of defined structure of a whip contact and claims of type II also each call for some kind of particular relation of parts of the whip and the latch. These characteristics may be generally referred to as follows for general claim organization, (without suggesting all the claims referred to together are necessarily alike in any aspect but merely to indicate they have some related features among their varied combinations; and also without suggesting that any other terms of the claims, not referred to here, should be ignored):

A. A whip comprising two distinct rod parts joined together and having a continuous conductive path: claim 11 and its dependent claims plus claims 50 and 51. (See, e.g., Figs. 8, 10-12 and 15.) A sub-category (A') includes a joint with a metal spine between the two parts of the whip: claims 12, 15, 17, 18, 31, 50 and 51. (See, e.g., Figs 15-17.)

B. A whip having surface conductor(s) of some one or more of the group consisting of a metal braid, foil, sheath, or wire: claims 33 and 48 with their dependent claims plus claims 18 and 44. (See, e.g., Figs. 4-9 and 15-17). A sub-category (B') includes a conductor with strands on the surface bonded by adhesive: claim 48 and its dependent claims plus claim 18, as in Figs. 16 and 17.

C. A whip with, at least at a tip end, a rod assembly of multiple rods. Claim 41 and its dependent claims, plus claims 9, 10, 17, 18, 36-38, 49 and 50. (See, e.g., Figs. 2A, 2B, 3, and 15-17.)

D. Whip and latch arrangements with designated whip parts and latch parts engaged in switch operations: All of the claims of type II to an air break switch mentioned above include some limitation with respect to the character of the whip part last to separate from the latch in a switch opening. (See, e.g., Figs. 13, 14A, 14B, 14C, 18A, 18B, 18C, 18D and 19A and 19B.) A sub-category (D') includes claims that further define the character of the latch as having a latch wheel that engages the whip during switch opening: claims 35, 37, and 45. A further sub-category (D") has other particulars of the whip and latch combination: claims 39, 40, 46, and 47.

These are various example aspects of the claims that are mentioned to help in their consideration. Many of the claims under rejection have two or even more of the described characteristics in their respective combinations and all the claims should be considered based on the subject matter as a whole.

As a further aid to their consideration, the rejected claims can be identified as follows consistent with the above categorization of their subject matter:

Independent claim	11: I, A
Dependent claims	12 and 15: I, A'
	17: I, A' and C
	18: I, A', C and B'
	19 and 20: I, A
	31: I, A' and B'

Independent claim	33: II, B & D
Dependent claims	34: II, B & D
	35: II, B & D′
	36 and 37: II, B, C & D
	38: II, B, C & D′
	39 and 40: II, B & D″
Independent claim	41: II, C
Dependent claims	42: II, C
	44: II, C and B
	45: II, C & D′
	46 and 47: II, C & D″
Independent claim	48: I, B′
Dependent claims	2 and 5-8: I, B′
	9: I, B′ and C
	10: I, B′, C & A
	49: I, B′, A & C
	50 and 51: I, B′, C & A′

(vi) Grounds of Rejection

35 USC §112

Claim 49 is rejected under 35 U.S.C. 112, 2nd paragraph, as being definite (by use of the term "principally comprises" in defining the composition of an element).

35 USC §103

Claims 2, 5-12, 15, 17-20, 31, 33, 34, 39, 40, and 48-51 are rejected under 35 USC §103(a) as unpatentable over U.S. Patent 5,369,234 of Demissy in view of U.S. Patent 4,080,643 of Cline.

Claims 35, 38, 41, 42, and 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demissy in view of Cline and U.S. Patent 3,955,303 of Outlaw et al.

Rejection Uncertain

Claims 36 and 37 are identified as rejected claims without grounds for rejection being stated.

(vii) Argument

Rejection under §112, 2nd paragraph

This rejection was first made in the final action.

The term of claim 49 that is in issue is, in context, "the rod is tapered and principally comprises a nonmetallic material". The remarks with the rejection merely contend the relative term ("principally comprises") renders the claim indefinite, without further explanation.

MPEP § 2173.05(b) makes it clear that relative terms are not necessarily indefinite under the statute. A further explanation for alleged indefiniteness has to be given, as instructed by MPEP § 706.03(d). Nothing said about this rejection gives a reason why one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In fact, one would perhaps be

better apprised than if "comprises" was not qualified in any way, as would be satisfactory without question.

The rejection clearly should be reversed.

Rejections under Sec. 103

Each 103 rejection lacks the support needed for *prima facie* obviousness. Numerous examples will be noted why that is so.

Even before considering how any claims distinguish over the art, the art relied on should be considered for what each shows to support the combinations and modifications that supposedly establish basis for the rejections. When one does so, it is plain there is not adequate basis under the statute to make out obviousness, particularly as elucidated by the Manual and the authorities cited therein.

In considering the following discussion of the particular rejections, the Board should recognize the implausibility of the supposed combinations and modifications of the art. The Argument also points out numerous instances of how even those combinations and modifications, along with what could be reasonably considered to be within ordinary skill in the art, fail to meet the claims; those examples further show why the initial criterion for *prima facie* obviousness is not met.

Rejection over Demissy and Cline

The rejection of claims over Demissy in view of Cline is applied to claims that include independent claims

11, 33 and 48, each of which is also separately argued with separate attention also to dependent claims.

Comments with the Rejection Do Not Support the Combination of Art

The discussion presented with the rejection fails to support any sound basis for any modification of Demissy's switch in accordance with any teachings regarding Cline's aircraft static discharger. Nothing in the references themselves, or the problems they address, or the knowledge of one of ordinary skill, has been pointed out as a reasonable basis for their combination. In arguing that the combination is a reasonable one the action contends that it is supported by disclosure in Cline about a fiberglass rod coated with conductive carbon as providing a highly predictable and stable resistance and a low thermal coefficient of expansion making it useful over a wide range of temperatures (Cline col. 1, lines 50-58). This, it is argued, means "one of ordinary skill in the art would be motivated to combine the fiberglass rod with conductive exterior of Cline with the device of Demissy to obtain all the benefits that are offered by the fiberglass rod" (page 9 of the final action). That totally ignores the fact that nothing in Demissy points to a need or desire for any "benefits" of more stable resistance or lower thermal coefficient. From all that appears in Demissy, the resistance and thermal coefficient of its flexible metal rod present no problem at all, let alone a motivation to change to a fiberglass rod with a conductive coating as Cline is said to disclose. The additional contention on page 9 of the action that the alleged benefits of Cline's structure

"all are highly valuable for a whip operating in high voltage environment" lacks any basis in the art and is mere speculation.

The rejection, therefore, does not meet the first criterion to establish a *prima facie* case of obviousness. The required motivation to combine the references is lacking and that should result in complete reversal of both rejections under Section 103.

Additional Reasons the References Are Not Reasonable to Combine

If one thoroughly reviews Demissy and Cline, one finds more reasons against a plausible combination based on their particular purposes and problems to be solved. Demissy's switch with elements 16 and 17 is clearly of a type expected to operate fully exposed to weather and the environment. In particular, Demissy has an object to have a whip section switch "that operates safely, even when the section switch is covered in ice", (column 1, lines 42-44). The result is a structure with a metal rod whip 16 that conductively engages a guide piece 17 that has a portion 17A with a barb 17B. Contact pressure between 16 and 17 is large (column 4, lines 1-6). Nothing in Cline is apt to help achieve Demissy's object. Cline effectively teaches in a contrary direction. Cline is cited for its advantageously stable resistance and low thermal coefficient. It explains former problems in aircraft static dischargers where an exterior resistance coating, otherwise satisfactory, "was subject to erosion and damage due to the extreme environmental conditions encountered..." (col. 1, lines 16-20) or an injectable, enclosed, resistance material was such

that in manufacture it was found the resistance was difficult to predict (column 1, lines 31-35). The structure proposed by Cline is one to avoid such effects by an internal discharger element 40 formed so it can have a stable resistance and enclosed within a tube 25, apparently for environmental protection (col. 4, line 62, to column 5, line 2). One can search in vain for any aspects for the two references that would make it reasonable to pick features of one to apply to the other.

Lack of Other Criteria for *Prima Facie* Obviousness

In addition, the other two criteria to establish a *prima facie* case of obviousness are also lacking. Consistent with MPEP §§2142-2143 (and its subsections), it is necessary also for the Examiner to show the contended combination of the references has a reasonable expectation of success and all claim limitations (i.e., the claimed subject matter as a whole) are taught or suggested by the prior art in whatever combination or modification is to be made. The present rejections fail to meet either of those criteria as well.

For example, an expectation of success in providing an element with a stable resistance or a low thermal coefficient (if presumed from Cline) cannot reasonably be said to make it likely to provide a successful whip structure that can operate in good electrical contact with another element (e.g., as must whip 16 and guide piece 17 of Demissy).

Furthermore, even if one made the modification that is contended, the combination would not meet all of the claim limitations.

Independent Claim 11

Claim 11 defines a switch with a whip of two parts having different characteristics. Even if there were a suggestion to replace the whip of Demissy with Cline's structure, that would not meet the claim limitations as to a two-part whip. For one thing, the two parts referred to in the claim have a continuous conductive path exposed for contact. In Cline's structure, the alleged "two parts" are specifically taught to be spaced from each other (column 4, lines 1-8). The rejection (final action page 4, line 2 et seq.) even acknowledges the gap is taught but dismisses it as obvious to change to give continuity. This is an attempt to take a reference, Cline, and assume modifications that the reference explicitly teaches away from.

Also, the rejection does not present a coherent statement for how it is made obvious to apply the alleged two part rod of Cline, even if it is assumed (erroneously) to be obviously alterable to make it continuously conductive, in a switch combination that specifically requires contact over the surface with another element (as Demissy's whip 16 has with the guide piece 17). Cline's structure is not related to anything making surface contact.

Dependent claims 12, 15, 17, 18 and 31

Among the claims depending from claim 11, all of claims 12, 15, 17, 18, and 31 define structure of a joint between the two parts of the whip.

How conductive rod 40 in the second part 20 of Cline's structure could meet the spine arrangement of claim 12 and others, as contended on action page 4, is in no way apparent. For one thing, the rod 40 is taught to have its major portion "free to move within the body 25" (column 3, lines 46-47). The rejection generalizes obviousness as a conclusion without factual basis.

Dependent claims 19, 20 and 31

Claims 19, 20 and 31 define relative strength characteristics of two parts not reasonably taught by any of the references, let alone in any relevant context. The statement on page 4 of the final action about claim 19 is like saying: If you make it that way it will have that result. But that does not show the art makes it obvious either to make it that way or motivate one to want that result.

Dependent Claim 20

The comments regarding claim 20 (and also claim 51 which is under clam 48) in the rejection (page 4 of the action) are not germane to a present issue. The Leshin case is limited to an instance of making an article of a known material from a class of materials with other members previously used for that article; see MPEP §2144.07. Before reaching any such issue as "obvious design choice", there should be factual support in the art regarding the article, which in the case of claim 19 means at least a whip with the two specified parts of claim 11. That is absent here. Also, no suggestion for use of any relevant material in a

relevant context is to be found in art applied in the rejection.

For all the foregoing reasons, it is believed clear that the rejection of claim 11 and its dependent claims should be reversed.

Independent Claim 33

As to independent claim 33, the combination applied in the rejection fails to meet all limitations because, for example, the switch of the claim is to have a whip with a surface conductive path of one or more conductors of a certain group, and the surface conductive path extends continuously to a conductive connection to a switch contact. The whip conductively engages a latch during switch opening. The structure relied on in Cline, when applied to Demissy, cannot meet those limitations. The rejection (page 5) refers to Cline's discharge rod of fiberglass with a conductive carbon coating "as well as a conductive ribbon on the outer surface". This is a confusion of different aspects of Cline's disclosed structure. The outer exposed surface conductive ribbon is explicitly taught not to be in a continuous conductive path to any other element. The fiberglass rod with a carbon coating is quite clearly to be interior and not available for conductive engagement with a switch latch or anything else. No suggestion is present in the art for any of the defined conductors on the surface of a whip element of a switch combination.

Dependent claims 34 and 40

Claims 34 and 40 (among others) recite fiber reinforced plastic as a material in the nonmetal whip portion. Such a material is known, as the action contends on page 5, e.g. in the inner rod in Cline, and nothing in the present claims implies that appellants think the material is new by itself. But nothing here suggests it as a material for a whip in place of, or in combination with, a metal whip in art such as Demissy. (Appellants maintain their argument regarding claim 20, above, and claims 34 and 40 applies as well to all the claims reciting inclusion of particular materials, of which FRP is just an example, and need not be repeated or amplified in relation to the rejections.)

Dependent claims 39 and 40

Among the dependent claims 34-40 that are rejected, claims 39 and 40 define contrasting characteristics of the conductive metal surface of the initial contact region of the whip with the latch compared to the conductive path over a majority of the whip tip-end portion, as to which the rejection makes obviousness assumptions without a relevant context or explanation. The paragraph bridging pages 5 and 6 of the final action is stretching for a result without supporting substance. The attempt to relate parts of Cline's structure to a contact region between a whip and a latch contact falls well short of what is needed to make out obviousness.

Dependent claims 35 and 38

Claims 35 and 38 are also dependent claims from claim 33. Claims 35 to 38 are indicated to be subject to the second rejection under §103 as discussed below. No art is presented that suggests the claimed combination including a latch with a conductive wheel engaging a whip.

Dependent claims 36 and 37

Claims 36 and 37 do not have specified grounds for rejection. They can be readily seen to be distinct in various respects as discussed in connection with other claims.

Claim 33 and its dependent claims (both rejected and objected to) should be allowed.

Independent Claim 48

Regarding claim 48, it is also the case that the all limitations requirement cannot be met by a combination of Demissy and Cline. The rejection poses use of Cline's fiberglass rod with a conductive carbon coating "as well as a conductive ribbon with metallic aluminum particles on the outer surface" (page 3 of the final action). Among other faults, this confuses different aspects of the Cline disclosure without at all explaining how it suggests the subject matter of the claim: Neither the internal rod 40 with a carbon coating nor the outside body 25 with a conductive ribbon formed from aluminum powder of the Cline structure meets (or makes obvious) a limitation including "one or more metal conductors selected from the group

consisting of a metal braid and a metal wire, … including strands bonded to the rod surface by an adhesive at interstitial locations…". The rejection implicitly acknowledges that deficiency of Cline and contends, rather vaguely, "Demissy also discloses use of epoxy (resin) and carbon mixture" (page 3 of the final action). Where or how this is disclosed by Demissy is not explained, let alone how it would satisfy what is needed for true support of the rejection. The only inference that can be reasonably drawn from Demissy about any electrical contact structures is they are conventional metal throughout, with no reason to change to anything else, let alone something as Cline discloses "for the sake of low coefficient of thermal expansion and stable resistance".

The action, on page 8, attempts to bolster this aspect of the rejection by equating the ribbon 60 of Cline containing aluminum powder applied to an epoxy substrate with the claimed strands and adhesive. First, this misinterprets the reference and, second, bearing in mind that the ribbon 60 is Cline's internal, unexposed, conductor, it is not in a relevant context.

Dependent claims 2 and 5

These claims include more particular characteristics of the adhesive in the claimed combinations that are not addressed by the references.

Dependent claim 6

The remark regarding obviousness to use FRP in place of nylon as a rod material assumes an issue not

reached on this record. But it also appears contrary to Cline's reaching. He wants FRP inside the outer body.

Dependent claims 7, 8 and 49

These include a further definition of the character of the strands outer surface (e.g., claims 7 and 49), and the relation of strands of the conductor to the rod with the adhesive (e.g., claims 8 and 49). The comment on page 3 of the final action, apparently directed to claims 7 and 8, that "The conductive ribbon [of Cline] is taken as metal braid" is an unsupportable distortion but even if accepted does not have a relevant context.

Dependent claims 9, 49 and 51

These claims include a combination in a rod assembly with further distinguishing features. Please see the second 103 rejection argument. The comments with the rejection of claims 9, 49 and 51 ignore rod assembly limitations of these claims, except in the unsupported conclusory comment on page 9 of the final action as to claim 9.

Dependent claims 10 and 49-51

Here are included combinations with a metal rod portion (e.g., claims 10 and 49) or with such a metal rod portion and a joint with certain characteristics, (e.g., claims 50 and 51) and, thus, are more distinct; the latter two aspects are further discussed above in connection with the rejection of claim 11.

Claim 48 and all its dependent claims, rejected or objected to, should be allowed.

Rejection over Demissy, Cline and Outlaw et al.

Independent Claim 41

The rejection of some claims over Demissy in view of Cline and, in addition, the Outlaw et al. patent, likewise fails to meet the criteria needed for a *prima facie* obviousness rejection. The rejection has the faults discussed above regarding the supposed obviousness to modify Demissy by adoption of something from Cline, plus the fact Outlaw et al. does not meet any test for a reasonable combination with the other references and, if combined, would not result in anything like that claimed.

Outlaw et al. concerns a fishing rod with telescoping sections with features intended to cause life-like bait movement. There is nothing in the subject matter of any art, at least on this record, to suggest to one of ordinary skill that something in Outlaw et al. is reasonably combinable with, or suggests modification of, anything in the other references, let alone anything with a reasonably expectable chance of success for purposes of an air break switch with a whip contact.

The features of Outlaw et al. that the rejection contends apply simply do not meet the rejected claims limitations. The rejection is explained by the remark "It would have been obvious…to use telescoping fiber glass rod, with conductive outer surface in Demissy, as suggested by Cline and Outlaw et al., in order to make extendable whip with relatively low coefficient of thermal expansion and

stable resistance…" (page 6 of the final action). To the extent this statement is understandable, it is just plain wrong. Nothing is present to suggest any motivation to make Demissy's whip "extendable" or to affect its thermal expansion and resistance. Also, even if there was, it would be irrelevant to the claims that do not call for any such features. Cline's interest in thermal expansion and resistance is believed adequately dealt with above. With respect to extendibility (which is assumed to mean a capability to extend, or collapse, as the sections of the fishing rod of Outlaw et al. can), the claimed apparatus is contrary. Nothing in the claims raises an issue of extendibility or collapsibility that would make Outlaw et al. relevant.

All the claims under this rejection, except claim 35 discussed below, similarly distinguish at least in defining a whip including a rod assembly along with other elements in a switch combination.

Dependent claims 42 and 44-47

Additional aspects of these claims not adequately addressed by the rejection are, for example, the definition of the conductive path in claim 44 (see above discussion of the rejection of claim 33), the particular relation of the whip and a latch with a conductive wheel, in claim 45, (please see the following discussion of claim 35) and the character of the initial contact region of the whip in claims 46 and 47, as discussed above in connection with claims 39 and 40.

Claim 35 (dependent on claim 33)

Claim 35, included in this rejection, happens not to include any limitations respecting a rod assembly. It distinguishes, for example, as does claim 33 and for the following additional reasons.

The rejection comments on claims 35, 38 and 45 (action page 6) that the cited art does not show a latch with a wheel but "Use of wheel for reducing mechanical friction is well known in the art and therefore, it would have been a matter of design choice..." comes short of making a reasonable basis for obviousness, even as to this single feature. For example, no nexus is shown between the cited art and any interest in or motivation for reducing mechanical friction of a contact moving against another element of any kind, let alone the whip in relation to the guide piece of Demissy.

Consequently, all of the claims under the rejections combining Demissy and Cline or such two references plus Outlaw et al. are believed clearly allowable, along with the objected to claims, and their rejections should be reversed.

Supplemental Discussion

The 103 rejections are so poorly substantiated on this record that there is no need to look to any evidence to rebut a *prima facie* case of obviousness.

As MPEP §2142 makes clear:

> "The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness."

That is the present situation and appellants have amply explained reasons for finding a *prima facie* case has not been made out. These reasons are mere examples of the deficiencies of the rejections, certainly sufficient but not necessarily all-inclusive.

In addition, this record shows an attempt to use nonanalogous art and an impermissible degree of hindsight to put a rejection together.

To rely on a reference under 35 U.S.C. 103, it must be analogous prior art (MPEP §2141.01(a)). Generally, that means the art applied against a claimed invention must be in the same field or endeavor as the invention. That might be said to apply to the Demissy reference but certainly not to Cline or Outlaw et al. that are in fields remote from whip like electrical contacts or switches with such elements for arc extinguishing. So then a question is whether there is some problem or matter dealt with that "logically would have commended itself to an inventor's attention in considering his problem"; somehow that needs to be answered affirmatively if a reference out of the field of the invention is to be found to be analogous. Nothing in Cline's pursuit of an aircraft discharger that avoids environmental effects with stable resistance and limited thermal expansion or Outlaw et al.'s fishing rod with features for attracting bait would logically commend itself

to ones attention for any aspect of performance of a whip like electrical contact, let alone such a contact applied in an arc extinguishing device of an air break switch.

Plainly, nothing about Cline or Outlaw et al. would be said to be related at all to the claimed invention without overuse of hindsight afforded by appellants' own disclosure. As explained in MPEP § 2145X.A, impermissible hindsight is that which goes beyond what is within the knowledge of one of ordinary skill in the art of the invention at the time the claimed invention was made and depends on knowledge gleaned only from an applicant's disclosure. Any logic for trying to combine, even inadequately, such references as Cline or Outlaw, with each other or with Demissy, is clearly not found within the knowledge of one of ordinary skill in the art but only comes about by knowledge of the present disclosure.

Furthermore, even with such nonanalagous art and overuse of hindsight, it is clear the claimed combinations are not made obvious.

In summary, multiple reasons are shown why each of the rejections should be reversed and such action is respectfully requested.

(viii) Claims Appendix

Claims involved in the appeal are as follows (including all rejected claims plus claims 43 and 52-54 that are merely objected to):

2. The structure of claim 48 where:

the adhesive includes a resinous material containing metallic particles.

5. The structure of claim 48 where:

the adhesive includes at least one resinous material selected from the group consisting of epoxy resin, urethane resin, and silicone resin and contains metal particles.

6. The structure of claim 5 where:

the rod is tapered and principally comprises fiber-reinforced plastic material.

7. The structure of claim 6 where:

the one or more conductors have greater conductivity than the adhesive; and

the outermost, exposed, surface of the metal strands is substantially free of the adhesive.

8. The structure of claim 7 where:

the conductive path is formed principally of a tubular metal braid directly on the exterior rod surface with the adhesive on the exterior rod surface at at least some of the interstitial locations between the strands.

9. The structure of claim 6 where:

the flexible rod is a first rod in a rod assembly with at least a second tapered rod located within a part of the first rod and the rods have blunt ends secured together at a common axial position.

10. The structure of claim 9 further comprising:

a substantially all-metal rod portion having an end joined with the blunt ends of the rods in the rod assembly with the conductive path on the first rod of the rod assembly conductively connected with the all-metal rod.

11. An electrically conductive whip-like contact structure comprising:

a tapered, elongated, and flexible member including first and second parts with an end of the first joined with an end of the second and with a taper proceeding along the member with smaller cross-sectional dimensions from a largest end of the first part to a smallest end of the second part;

the first part being of substantially all-metal material;

the second part having a different composition than the first part with a density less than that of the first part; and

the first and second parts each having an electrically conductive surface forming a continuous conductive path along the outside of the joined parts with the conductive path exteriorly exposed for contact along its length.

12. The structure of claim 11 where:

the second part includes a tapered rod of nonmetallic material having one or more metal conductors thereon making up its electrically conductive path along the outside thereof; and

the second part is joined with the first part at a joint including a metal spine located within a central tapered hollow of the second part from a first axial point

near the first part to a second axial point outside of the joint between the first and second parts.

15. The structure of claim 12 where:

the metal spine is tapered in the same direction as the second part and is a member of a spring steel.

17. The structure of claim 12 where:

the rod of nonmetallic material of the second part principally comprises fiber-reinforced plastic material and is a first rod in a rod assembly that has, within the central hollow of the first rod, at least a second tapered, tubular rod that also principally comprises fiber-reinforced plastic material; and

the rod assembly, in a portion proximate the first part of the flexible member, has the rods thereof fit tightly together and an innermost rod of the rod assembly over a part of its length fits tightly together with the metal spine located within it.

18. The structure of claim 17 where:

the one or more metal conductors on the second part include at least one conductor selected from the group consisting of a metal braid and a metal wire adhesively bonded to the surface of the first rod of nonmetallic material.

19. The structure of claim 11 where:

the composition of the second part also has a greater specific strength than the all-metal material of the first part.

20. The structure of claim 19 where:

the composition of the second part comprises a member selected from the group consisting of fiber reinforced plastics and metal matrix composites; and

the material of the first part comprises a member selected from the group consisting of beryllium-copper and stainless steel.

31. The structure of claim 12 where:

the first part is a metal spring rod and the second part is a rod of fiber reinforced plastic polymer with a surface conductor comprising a wound wire or wire braid bonded to the polymer rod by a flexible conductive polymer adhesive; and

the first part and the second part are such that the first part imparts accelerating force to the second part after release of the second part from conductive engagement with another contact element during which the first part and the second part have been flexed.

33. An air break switch comprising:

first and second main switch contacts movable relative to each other to produce a switch opening or a switch closing;

a whip and a latch, conductively connected with respective ones of the main switch contacts, that mutually conductively engage at least during part of a switch opening;

the whip having a structure including, at least in a tip-end portion that is last to separate from the latch in a switch opening, a flexible nonmetal rod with a surface conductive path comprising at least one conductor selected from the group consisting of a metal braid, a metal foil, a metal sheath, and a metal wire; and

the surface conductive path of the whip tip-end portion extends continuously along the length of the nonmetal rod from its tip to a conductive connection leading

to the switch contact to which the whip is conductively connected.

34. The switch of claim 33 where:

the nonmetal rod of the whip tip-end portion contains fiber reinforced plastic.

35. The switch of claim 33 where:

the latch includes a conductive metal rod and a conductive wheel having a circumferential surface; and

the whip and latch are arranged for sliding conductive engagement between the surface conductive path of the whip tip-end portion and the circumferential surface of the latch wheel before the whip finally separates from the latch in a switch opening.

36. The switch of claim 34 where:

the nonmetal rod is a first rod in a rod assembly that has, within the first rod with the surface conductive path, one or more additional nonmetal rods arranged within a tapered hollow center of the first rod and firmly joined together at an inner end with an inner end of the first rod and spaced from each other and from the first rod at outer ends of the one or more additional rods.

37. The switch of claim 36 where:

the one or more additional rods each contain fiber reinforced plastic.

38. The switch of claim 37 where:

the latch includes a conductive metal rod and a conductive wheel having a circumferential surface; and

the whip and latch are arranged for sliding conductive engagement between the surface conductive path of the whip tip-end portion and the circumferential surface of the latch wheel before the whip finally separates from the latch in a switch opening.

39. The switch of claim 33 where:

the whip has an initial contact region that is first to contact the latch during a switch opening and also first to contact the latch during a switch closing; and

the initial contact region has a conductive metal surface of relatively high weight and durability to better withstand arcing during initial switch opening and closing compared to the weight and durability of the conductive path over a majority of the whip tip-end portion.

40. The switch of claim 39 where:

the whip initial contact region is on the portion of the whip including a nonmetal rod and the conductive metal surface of the initial contact region includes some conductive metal in addition to that of the conductive path on the majority of the whip portion including a nonmetal rod; and

the nonmetal rod of the whip tip end portion contains fiber reinforced plastic.

41. An air break switch comprising:

first and second main switch contacts movable relative to each other to produce a switch opening or a switch closing;

a whip and latch, conductively connected with respective ones of the main switch contacts, that mutually conductively engage at least during part of a switch opening;

the whip having a structure including, at least in a tip-end portion that is last to separate from the latch in a switch opening, a rod assembly of a first flexible nonmetal rod with a surface conductive path and one or more additional nonmetal rods arranged within a tapered hollow center of the first nonmetal rod and firmly joined together

at one end with an inner end of the first rod and spaced from each other and from the first at outer, tip, ends of the one or more additional rods; and

the surface conductive path of the whip tip-end portion extends continuously along the length of the first nonmetal rod from its tip to a conductive connection leading to the switch contact to which the whip is conductively connected.

42. The switch of claim 41 where:

each of the nonmetal rods of the whip tip-end portion contains fiber reinforced plastic.

43. The switch of claim 41 where:

the latch includes a conductive metal rod and a conductive wheel having a circumferential surface;

the whip and latch are arranged for sliding conductive engagement between the surface conductive path of the whip tip-end portion and the circumferential surface of the latch wheel before the whip finally separates from the latch in a switch opening; and

the latch also includes a conductive latch camming surface in an arrangement with sliding conductive engagement, during a switch closing, between the whip and the latch camming surface and rod without contact of the whip with the wheel.

44. The switch of claim 41 where:

the surface conductive path comprises at least one conductor selected from the group consisting of a metal braid, a metal foil, a metal sheath, and a metal wire.

45. The switch of claim 42 where:

the latch includes a conductive metal rod and a conductive wheel having a circumferential surface; and

the whip and latch are arranged for sliding conductive engagement between the surface conductive path of the whip tip-end portion and the circumferential surface of the latch wheel before the whip finally separates from the latch in a switch opening.

46. The switch of claim 41 where:

the whip has an initial contact region that is first to contact the latch during a switch opening and also first to contact the latch during a switch closing; and

the initial contact region has a conductive metal surface of relatively high weight and durability to better withstand arcing during initial switch opening and closing compared to the weight and durability of the conductive path over a majority of the whip tip-end portion.

47. The switch of claim 46 where:

the whip initial contact region is on the portion of the whip including a nonmetal rod and the conductive metal surface of the initial contact region includes some conductive metal in addition to that of the conductive path on the majority of the whip portion including a nonmetal rod; and

the nonmetal rod of the whip tip end portion contains fiber reinforced plastic.

48. An electrically conductive whip-like contact structure comprising:

a flexible rod;

a conductive path along an exterior surface of the rod, the conductive path including one or more metal conductors selected from the group consisting of a metal braid and a metal wire, the one or more metal conductors including metal strands bonded to the rod surface by an

adhesive at interstitial locations between the metal strands.

49. The structure of claim 2 where:

the rod is tapered and principally comprises a nonmetallic material;

the one or more metal conductors have greater conductivity than the adhesive;

the conductive path is formed principally of a tubular metal braid directly on the exterior rod surface with the adhesive bonding between sides of strands of the braid and the rod surface and with the outermost, exposed, surface of the metal strands substantially free of the adhesive;

the flexible rod is a first rod in a rod assembly with at least a second tapered rod located within a part of the first rod and the rods have blunt ends secured together at a common axial position; and, in addition,

a metal rod portion has an end joined with the blunt ends of the rods in the rod assembly with the conductive path on the first rod of the rod assembly conductively connected with the metal rod.

50. The structure of claim 10 further comprising:

a metal spine within at least the blunt end of the rod assembly with an innermost rod of the rod assembly joined together with the metal spine.

51. The structure of claim 50 where:

the rods of the rod assembly all principally comprise fiber-reinforced plastic material; and

a joint between the end of the all-metal rod portion and the ends of the rods of the rod assembly comprises a metal socket over the joined ends with the ends

of the rods of the rod assembly and the metal spine firmly joined together.

52. The switch of claim 38 where:

the latch also includes a conductive latch camming surface in an arrangement with sliding conductive engagement, during a switch closing, between the whip and the latch camming surface and rod without contact of the whip with the wheel.

53. The switch of claim 43 where:

the whip has a metal base portion connected at a first end with a movable support of a first main switch contact and at a second end with the tip-end portion with a joint between the base portion and the tip-end portion with the joint providing part of the conductive connection;

the joint between the whip base and tip-end portions is located, in relation with the latch, to provide the conductive engagement, during a switch closing, between only the base portion of the whip with the latch.

54. The switch of claim 53 where:

the rods of the whip tip-end portion contain fiber reinforced plastic and the surface conductive path includes at least one conductor comprising metal strands over the surface of the first rod with interstitial sites between strands where an adhesive bonds sides of the strands with the rod surface, the outermost exposed surface of the strands being substantially free of the adhesive; and

the joint between the whip base portion and tip-end portion includes a metal spine located within the interior of the tip-end portion and firmly joined with the innermost rod of the one or more additional nonmetal rods and the joint also includes a metal socket within which the joined ends of the whip portions are firmly located.

(IX) Evidence Appendix

No additional evidence is relied on by the appellants.

(x) Related Proceedings Appendix

None

Respectfully submitted,

Gordon H. Telfer

Gordon H. Telfer
Attorney for Appellants
Registration No. 19,850
Phone: 412-823-6981